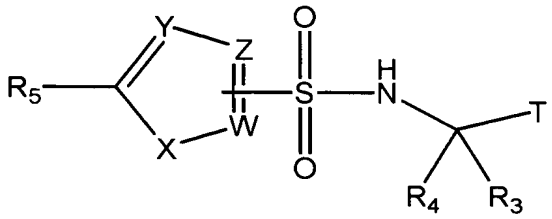
What is claimed is:

1. A compound of Formula (I), or pharmaceutically acceptable salt thereof, wherein Formula (I) has the structure:



(I)

wherein:

T is selected from the group consisting of CHO, COR_8, and $C(OH)R_1R_2$;

R_1 and R_2 are independently selected from the group consisting of hydrogen, lower alkyl, substituted lower alkyl, CF_3, alkenyl, substituted alkenyl, alkynyl, and substituted alkynyl;

R_3 is selected from the group consisting of hydrogen, lower alkyl and substituted lower alkyl;

R_4 is selected from the group consisting of $(CF_3)_n$alkyl, $(CF_3)_n$(substitutedalkyl), $(CF_3)_n$alkylphenyl, $(CF_3)_n$alkyl(substitutedphenyl), and $(F)_n$cycloalkyl;

n=1-3;

R_5 is selected from the group consisting of hydrogen, halogen, CF_3, diene fused to Y when Y=C, and substituted diene fused to Y when Y=C;

W, Y and Z are independently selected from the group consisting of C, CR_6 and N with the proviso that at least one of W or Y or Z must be C;

R_6 is selected from the group consisting of hydrogen, halogen, lower alkyl, and substituted lower alkyl;

X is selected from the group consisting of O, S, SO_2, and NR_7;

R_7 is selected from the group consisting of hydrogen, lower alkyl, substituted lower alkyl, benzyl, substituted benzyl, phenyl, and substituted phenyl; and

R_8 is selected from the group consisting of lower alkyl, CF_3, phenyl, and substituted phenyl;
or a pharmaceutically acceptable salt, hydrate, or prodrug thereof.

2. The compound according to claim 1, wherein R_5 is halogen.

3. The compound according to claim 2, wherein R_5 is chlorine, bromine, or fluorine.

4. The compound according to claim 1, wherein R_1 and R_2 are each hydrogen.

5. The compound according to claim 1, wherein W is C and Z is CR_6.

6. The compound according to claim 1, wherein X is S, and W, Y and Z are independently selected from C or CR_6, provided that one of W, Y or Z is C.

7. The compound according to claim 1, wherein R_4 is selected from the group consisting of $(CF_3)_n$loweralkyl, $(CF_3)_n$(substitutedloweralkyl), $(CF_3)_n$loweralkylphenyl, and $(CF_3)_n$loweralkyl(substitutedphenyl) of S-stereochemistry.

8. The compound according to claim 1, wherein X is S, W is C, Y is CH, Z is CH, R_5 is chlorine, R_4 is $CF_3CH_2CHCH_3$, R_3, R_1 and R_2 are each hydrogen, which has 1S, 2R stereochemistry.

9. The compound according to claim 1, wherein X is S, W is C, Y is CH, Z is CH, R_5 is chlorine, R_4 is CF_3CHCF_3, R_3, R_1 and R_2 are each hydrogen, which has 1S stereochemistry.

10. The compound according to claim 1, wherein W is N and X is NR_7.

11. The compound according to claim 1, wherein the compound is selected from the group consisting of:

5-Chloro-N-[(1S, 2R)-4,4,4-trifluoro-1-(hydroxymethyl)-2-methylbutyl]thiophene-2-sulfonamide;

5-Chloro-N-[(1S, 2R)-2-ethyl-4,4,4-trifluoro-1-(hydroxymethyl)butyl]thiophene-2-sulfonamide;

5'-Chloro-N-[(1S, 2R)-2-ethyl, 4,4,4-trifluoro-1-(1-hydroxyethyl)butyl]thiophene-2'-sulfonamide;

5'-Chloro-N-[3,3,3-trifluoro-2-(trifluoromethyl)-1-hydroxymethyl)propyl]thiophene-2'-sulfonamide;

5'-Chloro-N-[3,3,3-trifluoro-2-(trifluoromethyl)-1-S-(hydroxymethyl)propyl]thiophene-2'-sulfonamide;

5-Chloro-N-[(1R, 2S)-2-ethyl-4,4,4-trifluoro-1-(hydroxymethyl)butyl]thiophene-2-sulfonamide;

5-Chloro-N-[4,4,4-trifluoro-1-(hydroxymethyl)butyl]thiophene-2-sulfonamide;

5-Chloro-N-{(1S, 2R)-4,4,4-trifluoro-1-[(1S)-1-hydroxyethyl]-2-methylbutyl}thiophene-2-sulfonamide;

5-Chloro-N-{(1S, 2R)-4,4,4-trifluoro-1-[(1R)-1-hydroxyethyl]-2-methylbutyl}thiophene-2-sulfonamide;

5-Chloro-N-[(1S, 2S)-4,4,4-trifluoro-1-(hydroxymethyl)-2-methylbutyl]thiophene-2-sulfonamide;

(2S, 3S)-2-(5-Chloro-3-methylbenzo[b]thiophene-2-sulfonyl)-amido-5,5,5-trifluoro-3-ethyl-pentan-1-ol;

(2S, 3R)-2-(5-Chloro-1,3-dimethyl-1H-pyrazole-4-sulfonyl)-amido-5,5,5-trifluoro-3-phenyl-pentan-1-ol;

5-Chloro-N-[1-(4,4-difluorocyclohexyl)-2-hydroxyethyl]thiophene-2-sulfonamide;

5-Chloro-N-[1-(6,6-difluorobicyclo[3.1.0]hex-3-yl)-2-hydroxyethyl]thiophene-2-sulfonamide;

5-Chloro-N-[(1S,2R)-4,4,4-trifluoro-1-formyl-2-methylbutyl]thiophene-2-sulfonamide;

N-[(1S,2R)-1-Acetyl-4,4,4-trifluoro-2-methylbutyl]-5-chlorothiophene-2-sulfonamide;

5-Chloro-N-[(1S,2R)-4,4,4-trifluoro-1-(1-hydroxy-1-methylethyl)2-methylbutyl]thiophene-2-sulfonamide;

4-Bromo-5-chloro-N-[3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

4-Bromo-5-chloro-N-[(1S)-3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

5-Chloro 4-fluoro-N-[3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

5-Bromo- N-[3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

5-Fluoro-N-[3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

5-Bromo-N-[(1S)-3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

5-Fluoro-N-[(1S)-3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

5-Chloro-N-[4,4,4-trifluoro-1-(hydroxymethyl)-2-(2,2,2-trifluoroethyl)butyl]thiophene-2-sulfonamide;

5-Chloro-N-[(1S)-(4,4,4-trifluoro-1-(hydroxymethyl)-2-(2,2,2-trifluoroethyl)butyl)]thiophene-2-sulfonamide;

4,5-Dichloro-N-[3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

N-[(1S)-3,3,3-Trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-3-sulfonamide;

2,5-Dichloro-N-[(1S)-3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-3-sulfonamide;

N-[(1S)-3,3,3-Trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

4,5-Dichloro-N-[(1S)-3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

Thiophene-2-sulfonic acid (3,3,3-trifluoro-1-hydroxymethyl-2-trifluoromethyl-propyl)-amide;

Thiophene-3-sulfonic acid (3,3,3-trifluoro-1-hydroxymethyl-2-trifluoromethyl-propyl)-amide;

2,5-Dichloro-Thiophene-3-sulfonic acid (3,3,3-trifluoro-1-hydroxymethyl-2-trifluoromethyl-propyl)-amide;

4,5-Dibromo-N-[3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

3-Bromo-5-chloro-N-[3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

4-Bromo-2,5-dichloro-N-[3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;

Benzo[b]thiophene-2-sulfonic acid (3,3,3-trifluoro-1-(hydroxymethyl)-2-(trifluoromethyl)propyl)-amide;

5-Chloro-(3,3,3-trifluoro-1-hydroxymethyl-propyl)-thiophene-2-sulfonamide; and

5-Chloro-*N*-[(1S)-3,3,3-trifluoro-1-[(1R)-1-hydroxyethyl]-2-(trifluoromethyl)propyl]thiophene-2-sulfonamide;
or a pharmaceutically acceptable salt, hydrate, or prodrug thereof.

12. The compound according to claim 1, which is 5-chloro-N-[(1S)-(4,4,4-trifluoro-1-(hydroxymethyl)-2-(2,2,2-trifluoroethyl)butyl)]thiophene-2-sulfonamide; or a pharmaceutically acceptable salt, hydrate, or prodrug thereof.

13. The compound according to claim 1, wherein X is O, and W, Y and Z are independently selected from C and CR_6, provided that one of W, Y or Z is C.

14. The compound according to claim 13, wherein R_5 is halogen, R_4 is selected from the group consisting of $(CF_3)_n$loweralkyl, $(CF_3)_n$(substitutedloweralkyl), $(CF_3)_n$loweralkylphenyl, $(CF_3)_n$loweralkyl(substitutedphenyl) of S-stereochemistry, and R_3, R_1 and R_2 are all H.

15. The compound according to claim 1, wherein T is $C(OH)R_1R_2$, R_1, R_2, and R_3 are H, and R_4 is $(F)_n$cycloalkyl.

16. The compound according to claim 1, wherein T is $C(OH)R_1R_2$, R_1, R_2, and R_3 are H, and R_4 is $(CF_3)_n$alkyl.

17. The compound according to claim 1, wherein T is $C(OH)R_1R_2$, R_1 is CH_3, R_2 is H, R_3 is H, and R_4 is $(CF_3)_n$alkyl.

18. The compound according to claim 1, wherein T is CHO, R_3 is H, and R_4 is $(CF_3)_n$alkyl.

19. The compound according to claim 1, wherein T is $C(OH)R_1R_2$, R_1, R_2 and R_3 are H, and R_4 is $(CF_3)_2CH$ of S-stereochemistry.

20. The compound according to claim 1, wherein T is CHO, R_3 is H, and R_4 is $CH(CH_3)CH_2CF_3$ of S-stereochemistry.

21. The compound according to claim 1, wherein T is $C(O)R_8$, R_3 is H, R_4 is $CH(CH_3)CH_2CF_3$ of S-stereochemistry, and R_8 is CH_3.

22. The compound according to claim 1, wherein T is $C(OH)R_1R_2$, R_1, R_2 and R_3 are H, and R_4 is $CH(CH_2CF_3)_2$ of S-stereochemistry.

23. The compound according to claim 1, wherein T is $C(OH)R_1R_2$, R_1, R_2 and R_3 are H, and R_4 is $CH(CH_3)CH_2CF_3$ of S-stereochemistry.

24. The compound according to claim 1, wherein T is $C(OH)R_1R_2$, R_1 is CH_3, R_2 and R_3 are H, and R_4 is $CH(CF_3)_2$ of S-stereochemistry.

25. The compound according to claim 1, wherein T is $C(OH)R_1R_2$, R_1, R_2 and R_3 are H, and R_4 is $(F)_n$cycloalkyl.

26. The compound according to claim 1, wherein the pharmaceutically acceptable salt is selected from the group consisting of salts of organic acids, salts of inorganic acids, salts of bases, and mixtures thereof.

27. The compound according to claim 26, wherein the salts of organic and inorganic acids are selected from the group consisting of acetic acid, lactic acid, citric acid, tartaric acid, succinic acid, fumaric acid, maleic acid, malonic acid, mandelic acid, malic acid, hydrochloric acid, hydrobromic acid, phosphoric acid, nitric acid, sulfuric acid, methanesulfonic acid, toluenesulfonic acid, and mixtures thereof.

28. The compound according to claim 26, wherein the salts of bases are selected from the group consisting of sodium hydroxide, lithium hydroxide and potassium hydroxide, and mixtures thereof.

29. A pharmaceutical composition comprising a compound according to claim 1 and a physiologically compatible carrier.

30. A pharmaceutical kit comprising a container comprising a pharmaceutical composition according to claim 29.

31. A pharmaceutical composition comprising a prodrug according to claim 1 and a physiologically compatible carrier.

32. A method of inhibiting beta amyloid production in a subject, said method comprising the step of delivering a compound according to claim 1 to said subject.

33. The method according to claim 32, wherein said compound is delivered orally, by injection or by inhalation.

34. A method of treating a disease selected from the group consisting of Alzheimer's Disease, amyloid angiopathy, cerebral amyloid angiopathy, systemic

amyloidosis, hereditary cerebral hemorrhage with amyloidosis of the Dutch type, inclusion body myositis, mild cognitive impairment (MCI) and Down's syndrome, in a subject, said method comprising the step of administering a compound according to claim 1 to said subject in an amount sufficient to alleviate the symptoms or progress of said disease.

35. A method of preparing a trifluoromethylated or fluorinated heterocyclic sulfonamide compound, said method comprising the steps of:

(a) filtering a diastereomeric mixture of an aminoester, said aminoester having at least one chiral center and at least one trifluoromethyl or fluoro group attached to at least one chiral center through an alkyl group;

(b) treating the aminoester with DIBAL-H in toluene to afford N-benzyl amino alcohol;

(c) hydrogenating the N-benzyl amino alcohol with a catalyst and affording an amino alcohol;

(d) sulfonylating the amino alcohol of (c) with a heterocyclic sulfonyl chloride; and

(e) crystallizing the sulfonylated product of (d) to afford to chirally pure trifluoromethylated or fluorinated heterocyclic sulfonamide compound.

36. The method according to claim 35, wherein the trifluoromethylated heterocyclic sulfonamide compound is a compound according to claim 1.

37. The method according to claim 35, wherein the crystallizing step is performing using ethyl acetate and hexane.

38. A method of preparing a trifluoromethylated or fluorinated heterocyclic sulfonamide compound, said method comprising the steps of:

(a) treating a trifluoromethylated or fluorinated aldehyde with a dehydrating agent and a chiral sulfinamide to form a trifluoromethylated or fluorinated chiral sulfinamide;

(b) treating said trifluoromethylated or fluorinated chiral sulfinimide with a cyanating agent to form a trifluoromethylated or fluorinated diastereomeric α-amino nitrile;

(c) hydrolyzing said trifluoromethylated or fluorinated diastereomeric α-amino nitrile to a trifluoromethylated α-amino acid;

(d) reducing said trifluoromethylated or fluorinated α-amino acid to a trifluoromethylated or fluorinated β-amino alcohol; and

(e) reacting said trifluoromethylated or fluorinated β-amino alcohol with a heterocyclic sulfonyl chloride to form said trifluoromethylated or fluorinated heterocyclic sulfonamide.

39. The method according to claim 38, further comprising:

(f) extracting said trifluoromethylated or fluorinated heterocyclic sulfonamide.

40. The method according to claim 38, further comprising purifying said trifluoromethylated or fluorinated heterocyclic sulfonamide.

41. The method according to claim 40, wherein said trifluoromethylated or fluorinated heterocyclic sulfonamide is purified using chromatography.

42. The method according to claim 38, wherein said dehydrating agent is titanium ethoxide, magnesium, sulfate, or 4Å molecular sieves.

43. The method according to claim 38, wherein said chiral sulfinamide is S-(+)-toluenesulfinamide or t-butanesulfinamide.

44. The method according to claim 38, wherein said cyanating agent is ethyl isopropoxy aluminum cyanide.

45. The method according to claim 38, wherein said dehydrating agent is titanium ethoxide, said chiral sulfonamide is S-(+)-toluenesulfinamide, and said cyanating agent is ethyl isopropoxy aluminum cyanide.